# West Cheshire College Tracks Whereabouts of Students, Staff

**The U.K. vocational and technical school uses Zebra's Dart RFID tags to monitor teachers' locations, and to determine how many students are on campus at any given time, as well as which facilities they utilize.**

By Mary Catherine O'Connor

Apr. 30, 2012—Schools rely on qualified teachers, motivated students and a challenging curriculum. But many, such as West Cheshire College—a vocational and technical college located in northwest England—also depend on government funding. And such funding requires that schools be able to document the number of students attending classes.

That's why West Cheshire College has deployed a real-time location system (RTLS) within its campus buildings. The school currently employs the technology to monitor how its new buildings are being utilized—the number of full-time students on the various campuses each day, and which facilities each utilizes. This will help the college ensure that it deploys adequate resources throughout its buildings. But the school also plans to utilize the RTLS solution to reliably, quickly and accurately track student attendance, and to document that each student's attendance record matches the actual number of hours for which the college receives funding (a process that is currently manual and time-consuming).



*Kevin Francis, West Cheshire College's building services area manager*

Since approximately 80 percent of the college's budget is spent on staffing, administrators use the RTLS to track the teaching staff, as a means of ensuring that educators report for classes consistently and on time. In the event of an emergency, the system also helps administrators to quickly locate students and professors.

The school deployed the technology in two phases—first at its Chester Campus, in 2010, and then at its newly built Ellesmere Port Campus, last year. After initially planning to issue active Wi-Fi tags to students that would communicate with each respective building's Wi-Fi network, the college tested active ultra-wideband (UWB) tags manufactured by Zebra Location Solutions, a division of Zebra Technologies.

The college opted to deploy Zebra's UWB tags and reader infrastructure because they provided reliable and more accurate location data—and at less cost compared with a Wi-Fi-based system—Kevin Francis, West Cheshire College's building services area manager, told attendees at RFID Journal LIVE! 2012, held last month in Orlando, Fla.

The average battery lifespan of a Zebra Dart UWB tag is seven years, Francis says, when set at a transmission rate of once per second. "We would need to purchase CCX tags [Wi-Fi tags optimized to work with Cisco's wireless local area network (WLAN) infrastructure] two to three times in the same time

period," he states, "resulting in an average saving of $400,000 to $600,000, depending on tag-blink settings, to meet [our] requirements."

What's more, Francis adds, Zebra's tag receivers are self-calibrating and "would not require additional re-fingerprinting." To validate the accuracy of a Wi-Fi-based RTLS deployment, he explains, the college would need to recalibrate (re-fingerprint) the Wi-Fi access points, which receive signals transmitted by the tags, "anywhere from once per year to once per quarter."

The Dart UWB tags emit brief RF signals across the entire 6.35 to 6.75 GHz frequency band. These signals are picked up by Zebra UWB receivers, located throughout the monitored area and wired to a central processing hub. The hub collects the tag and position data, and forwards it to Zebra's Location Appliance software, running on a separate computer, which determines the location in two dimensions.

The college is currently developing an automated system that would use the RTLS data for tracking individual class attendance. According to Francis, the school initially planned to utilize a software platform known as ResourceView—created by RTLS solutions provider Airetrak—for this process, but it is still working to resolve several technical issues delaying the deployment. In the meantime, teachers are still tracking attendance manually.

Francis says this software will provide "reports if [students or staff] are leaving early," stating, "We can search for individual [students or staff]. And we can look at them in groups, such as peer groups."

In the meantime, West Cheshire College has issued tags to its 5,500 full-time students. Upon first registering for classes, each student is issued a photo ID card, along with a Zebra Dart UWB badge tag. Zebra's UWB receivers, which can receive tag signals from up to 328 feet away, are located throughout the campus buildings, in order to ensure that the tags can be pinpointed no matter where within the school a student might be located. The receivers forward tag data to the Zebra Dart Hub, which collects information from the entire receiver network. The package's precise location accuracy enables the college to clearly identify students within its open learning zones, in which two or three classes may be taking place at any given time.

Tags have also been issued to approximately 500 faculty members. Accounting for the location of its staff helps the college to ensure that employees report to classes according to their schedules, while also assisting administrators in quickly locating staff members in the event of an emergency. Some personnel have first-aid certification, Francis says, so the RTLS solution allows administrators to quickly and efficiently locate these individuals if they are required in the case of a medical emergency.

That is also true of the students carrying the Zebra tags, Francis notes. In fact, he says, students with both learning disabilities and physical limitations have been given customized evacuation plans in case an emergency occurs. During safety drills, these students are asked to follow those special instructions—designed to ensure that they can quickly and safely leave the building or get to a secure shelter in the event of an actual emergency—and administrators monitor the RTLS Location Appliance

software to be sure that these students do, in fact, follow their customized emergency plans.

In the future, Francis says, the college hopes to link the RTLS data to its building-management systems, such as heating, cooling and lighting, so that it can avoid wasting energy on unoccupied rooms, as well as reduce operating costs.